SAMPLING PLAN
FOR
PHASE II ENVIRONMENTAL SITE ASSESSMENT
AT FORMER SUTTON TOOL PROPERTY
306 MAGNOLIA STREET
STURGIS, MICHIGAN

Envirologic is in the process of initiating a Phase II Environmental Site Assessment (ESA) for St. Joseph County Brownfield Redevelopment Authority under U.S. EPA Brownfield Assessment Grant BF-96552901-2 and BF-00E34701-0. The site was deemed eligible on March 8, 2008. A Phase I ESA was completed by Triad Environmental Services in 2004 for the current owner, Americraft Carton.

BACKGROUND

The Phase I ESA and additional information reviewed for the above-referenced property identified the following Recognized Environmental Conditions:

- The absence of specific information regarding chemical and waste handling practices at the site combined with the fire department record indicating that cyanides were used on site in a heat treating operation and evidence of the storage of 55-gallon drums outdoors is considered a Recognized Environmental Condition based on the *potential* for environmental impairment. Since hazardous waste regulations were not in effect until 1979, the potential historical practices on site prior to this date may have been less conscientious than practices typically employed today. While there is no direct evidence of a release of hazardous substances, the above-noted factors point to the potential for such a release.

The purpose of the Phase II ESA will be to investigate the property to determine if the past industrial operations on site have caused significant environmental impact to the site. Envirologic will do so by collecting several soil samples from relatively shallow depths to assess the potential for release from drum storage and heat treating operations. A limited number of groundwater samples will also be collected.

SPECIFIC DATA QUALITY OBJECTIVES

▪ **DQO: Are contaminants present associated with historic industrial operations?**		
Soil Borings		
GP-1, GP-2, GP-3, GP-4	*Location Rationale*	Soil borings will be placed at locations where drum storage was observed in aerial photographs and along the western portion of the former building where heat treating operations were once conducted.
	Sampling Depth	Samples will be collected from a discrete depth somewhere between 2-6 feet. The borings will be extended to a minimum depth of 15 feet to make field observations for potential impact. The two borings with the highest evidence of impact will be further extended to groundwater, estimated to be 40-50 feet below grade.
	Depth Rationale	Since the building was razed and the land graded, clean fill is present at the surface. Envirologic wishes to collect a soil sample as shallow as possible from the soil beneath this clean fill as is represents the soil most likely to be impacted from historic operations. Additional soil samples will be collected from deeper depths if field observations indicate the potential for impact.
	Media Sampled	Soil and groundwater.
	Parameters	VOCs, PNAs, cadmium, chromium, lead, cyanide.
	Parameter Rationale	Broad range of analytical parameters to investigate historic industrial activities.

FIELD SCREENING

During the advancement of borings, soils will be continuously screened for organic vapors using either a Flame Ionization Detector (FID) or Photoionization Detector (PID). Observations for visual staining and odors will also be made. Field Screening procedures in the Quality Assurance Project Plan (QAPP), including instrument calibration procedures, will be followed. Soils will also be classified in accordance with the accepted procedure in the Quality Assurance Project Plan.

SAMPLE COLLECTION PROCEDURES

Specific sampling methods detailed in the QAPP will be followed. Methods established in the QAPP for sample collection and preservation will be followed. Sample handling and custody requirements in the QAPP will be followed.

QUALITY ASSURANCE

Sampling activities will be completed in accordance with Envirologic's approved QAPP. Envirologic will conduct the appropriate number of QA/QC samples as specified in the QAPP. The following QA/QC sample collection and analysis requirement will be met:

Number of Samples	QA\QC Sample Type	Frequency of Sample Collection and Analysis	Sample Analyses
1 soil sample and 1 groundwater sample	Duplicate (Collocated) Sample	1 duplicate per 10 samples, minimum of 1 per sample event	VOCs, PNAs, select metals, cyanides
1 equipment rinsate sample	Equipment Blank from macro core.	1 equipment blank per 10 samples, minimum of 1 per day	VOCs
1 water sample	Trip Blank	1 trip blank per cooler containing samples for VOC analyses	VOCs
1 methanol sample	Field Blank	1 methanol blank per laboratory lot for VOC analyses	VOCs
1 soil sample and 1 groundwater sample	Matrix Spike/Matrix Spike Duplicate	1 MS/MSD per 20 samples or as specified in the lab SOPs	VOCs, PNAs, select metals, cyanides